

Rockets for Schools Delaware Content Standards

<u>Rocketry Curriculum</u>	<u>Content Standard</u>	<u>Performance Indicators</u>	<u>Performance Measures</u>
Naming the Rocket	Language Arts Persuasive	1.18, 1.19, 1.20, 3.127, 3.128, 3.129, 3.130, 3.131, 3.132, 5.130, 5.131, 5.132, 5.133, 5.134, 5.135, 5.136	written explanation of appropriateness of name and how it captures the spirit of the rocket
	Identify, Locate, and Select	2.177, 2.179, 2.180, 3.180	paragraph about the name and any historical significance
Designing a Logo	Language Arts Persuasive	1.118, 1.119, 1.120, 3.127, 3.128, 3.129, 3.130, 3.131, 3.132, 5.130, 5.131, 5.132, 5.133, 5.134, 5.135, 5.136	written explanation of appropriateness of logo and how it captures the spirit of the rocket
	Identify, Locate, and Select	2.177, 2.179, 2.180, 3.180	paragraph about the name and any historical significance
	Extend Meaning and Become Aware of the Mass Media	K.144, 1.163, 2.172, 2.173	logo design
Canister Rocket	Nature and Application of Science and Technology Science as Inquiry	5.305, 5.309	launch rocket successfully
	Energy and Its Effects Forms/Sources of Energy	5.301, 5.304, 5.305	
Balloon Lifting	Nature and Application of Science and Technology Science as Inquiry Energy and Its Effects	5.305	record number of paper clips gondola successfully holds

	Forms/Sources of Energy	5.304, 5.305, 5.306	
Bottle Rocket	Nature and Application of Science and Technology Science as Inquiry	5.305	record successful launch
	Energy and Its Effects Forms/Sources of Energy	5.3.03, 5.304, 5.305	
Model rocket	Nature and Application of Science and Technology Science as Inquiry	5.305	record successful launch
	Energy and Its Effects Forms/Sources of Energy	5.303, 5.304, 5.305	
Advanced Model Rocket	Nature and Application of Science and Technology Science as Inquiry	5.305	record successful launch
	Energy and Its Effects Forms/Sources of Energy	5.3.3, 5.304, 5.305	

Additional NASA lessons to supplement in your classroom:

Pop Can Hero	Nature and Application of Science and Technology Science as Inquiry	5.305	hypothesis testing chart
	Energy and Its Effects Forms/Sources of Energy	5.304, 5.305	execution of project
Rocket Racer	Nature and Application of Science and Technology Science as Inquiry	5.302, 5.305, 5.309	Test Report and Data sheet

	Science, Technology, and Society	*none specified	
	Materials and Their Properties		
	Material Technology	5.306	
	Energy and Its Effects		
	Forms/Sources of Energy	5.301, 5.302, 5.303, 5.304, 5.305, 5.306, 5.309	
3-2-1 Pop!	Nature and Application of Science and Technology		
	Science as Inquiry	*none specified	complete and launch/ report improvements
	Energy and Its Effects		
	Forms/Sources of Energy	5.301, 5.304	
Antacid Tablet Race	Nature and Application of Science and Technology		
	Science as Inquiry	3.321, 3.325, 3.326	conduct experiment
	Materials and Their Properties		written summary
	Changes in Materials	1.322, 3.319, 3.321	
Paper Rockets	Nature and Application of Science and Technology		
	Science as Inquiry	5.305, 5.309	
	Energy and Its Effects		
	Forms/Sources of Energy	5.301, 5.304, 5.305	
Newton Car	Materials and Their Properties		
	Material Technology	5.306	hypothesizing, experimenting, and graphing results
	Energy and Its Effects		
	Forms/Sources of Energy	5.301, 5.302, 5.304, 5.305, 5.306, 2.325	
Balloon Staging	Nature and Application of Science and Technology		
	Science as Inquiry	*none specified	successful design of 2-stage rocket
	Science, Technology, and Society	*none specified	
	Energy and Its Effects		
	Forms/Sources of Energy	2.325, 5.304	
Rocket Transportation	Nature and Application of Science and Technology		
	Science as Inquiry	*none specified	design and launch rocket
	Science, Technology, and Society	*none specified	log results
	Energy and Its Effects		

	Forms/Sources of Energy	2.325, 5.304, 5.305	
Altitude Tracking	Nature and Application of Science and Technology Science as Inquiry Science, Technology, and Society	*none specified *none specified	track rocket with altitude tracker and log results
Bottle Rocket Launcher	Nature and Application of Science and Technology Science, Technology, and Society	*none specified	construct launcher
Bottle Rocket	Energy and Its Effects Forms/Sources of Energy	2.325, 5.304, 5.305	successful launch
X-35	Energy and Its Effects Forms/Sources of Energy	2.325, 5.304, 5.305	pre-launch analysis launch log

*Scientists' curiosity about the natural world leads them to ask questions about how things work. In order to answer these questions, scientists observe and explore things carefully.

People have always invented new ways to solve problems and get work done. These inventions affect all aspects of life.

Science Content Standards

1.322 use writing, drawing, and discussion to communicate observations, descriptions, investigations, and experiences concerning solids and liquids.

2.325 Demonstrate how pushes and pulls (forces) can change the position, motion, or direction of an object. Explain that the greater the force, the greater the change.

- 3.319 Identify changes that materials undergo when exposed to various treatments or when the materials are separated into their component parts.
- 3.320 Observe and describe changes in the properties of a material as the material changes from one state to another.
- 3.325 Analyze and draw conclusions from material test results and support these conclusions with reasons based on evidence.

- 3.326 Develop lab procedures that ensure safety as well as the proper acquisition of evidence.

- 5.301 Demonstrate that speed is the measure of the distance traveled by a moving object in a given period of time.
- 5.302 Use rulers, meter sticks, tapes, and watches to measure the distance objects travel in a given period of time; organize the measurements in tables; and construct graphs based on the measurements.
- 5.303 Determine whether an object is moving slowly, quickly, or is stopped by collecting and recording data on the distance an object travels in regular time intervals ,or how much time it takes for an object to travel a certain distance.

- 5.304 Demonstrate and explain how the force exerted by an object can change the object's motion and speed.
- 5.305 Predict, measure, and compare how the speed and motion of an object is influenced by the object's mass, structural design, and material composition.
- 5.306 Explain how varying conditions upon which an object moves changes the speed of the object.
- 5.309 Develop appropriate vocabulary to describe the relationship among distance, time, and speed.

LANGUAGE ARTS CONTENT STANDARDS

- K.144 Respond to text in a variety of ways (art).
- 1.118 Use written language more than drawings to communicate with a reader.
- 1.119 Use detail in writing to state a position.
- 1.120 Begin to support a position with a personal opinion.
- 1.163 Respond to text in a variety of ways (art).
- 2.172 Respond to text in a variety of ways.
- 2.173 Use information from printed, electronic and oral texts to complete tasks.
- 2.177 Locate material on a specific topic.
- 2.179 Select and identify material relevant to topic.
- 2.180 List information relevant to topic.

- 3.127 Use written text to state and support a position for a reader.
- 3.128 Maintain a focus on a single position.
- 3.129 Support the position with details which could include personal opinions and examples.
- 3.130 Use a logical order of presentation.
- 3.131 Use convincing language.
- 3.132 Exhibit evidence of clear thinking and reasoning appropriate for the reader.
- 3.180 Obtain relevant information from sources.
- 5.130 Use written text to state and support a position for a reader.
- 5.131 Maintain a focus on a single position.
- 5.132 Support the position with details which could include personal opinions and examples.
- 5.133 Use a logical order of presentation.
- 5.134 Use convincing language.
- 5.135 Exhibit evidence of clear thinking and reasoning appropriate for the reader.
- 5.136 Select appropriate form for audience.

Classroom Applications of Rocketry Curriculum

Use Rocketry as framework for introducing/utilizing science process skills:

Observing

Classifying

Ordering

Measuring

Problem solving

Reasoning

Collecting & recording data

Computation & estimation

Hypothesizing & predicting

Patterns & functions

Constructing & interpreting models

Probability

Introducing Rocketry Activities: Examples

Create an awareness of historical events/technological advances:

Discuss overviews/timelines of air and space travel

Research specific topics in reference to names and logos.

Identify principles of flight through experimentation:

Balloon Lifting

Paper Rockets

Antacid Tablet Race

Pop Can Hero

Bottle Rockets

Design and Experiment with different models:

Canister Rocket

Bottle Rocket
Paper Rocket
Model Rocket
Advanced Model Rocket